

Response Under 37 C.F.R. § 1.116
Expedited Procedure
Art Unit 1773
Application No. 09/581,604
Paper Dated December 22, 2003
Reply to Office Action of August 27, 2003
Attorney Docket No. 1217-001125

REMARKS/ARGUMENTS

Claims 1-14 are pending in this application. Reexamination and allowance of the claims are respectfully requested.

Claims 1-14 stand rejected under 35 U.S.C. § 103(a) as being obvious over United States Patent No. 5,963,373 to Kayanoki (hereinafter "Kayanoki"). The Examiner asserts that Kayanoki substantially discloses the substrate, coating liquid, hard coat film, composite metal oxide particles, particle size limitations, matrix-forming component, organosilicon surface treatment, and anti-reflection film of the claimed invention, but does not specifically state that the weight ratio of the iron oxide to the titanium oxide may be 0.0005 to less than 0.005, or 0.001 to 0.0045. The Examiner concludes that it would have been obvious to one having ordinary skill in the art to have expected the same properties for a hard coat film comprising composite metal oxide particles of iron oxide and titanium oxide wherein the weight ratio of the iron oxide to the titanium oxide is 0.0005 to less than 0.005 or 0.001 to 0.0045.

Response Under 37 C.F.R. § 1.116

Expedited Procedure

Art Unit 1773

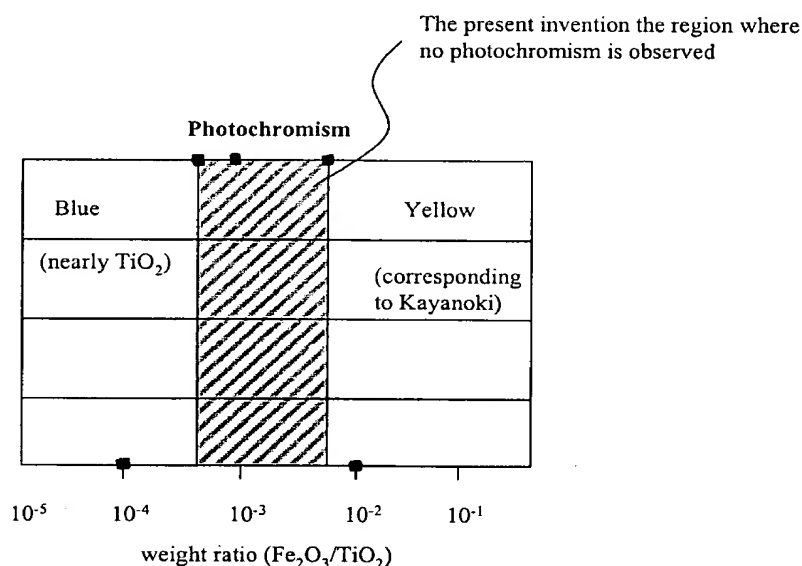
Application No. 09/581,604

Paper Dated December 22, 2003

Reply to Office Action of August 27, 2003

Attorney Docket No. 1217-001125

The graphs depicted below are plotted based on the data obtained from the Examples of the present invention. In the graph depicting Photochromism, the composite oxide according to the invention falls within the shaded area.



The composite metal oxide of the present invention having the limited $\text{Fe}_2\text{O}_3/\text{TiO}_2$ weight ratio (0.0005 to 0.005) has no photochromism, which is a critical feature. A composite metal oxide having a $\text{Fe}_2\text{O}_3/\text{TiO}_2$ weight ratio below the lower limit has photochromism and glows slightly blue upon irradiation of ultraviolet rays. A composite metal oxide having a $\text{Fe}_2\text{O}_3/\text{TiO}_2$ weight ratio above the upper limit has photochromism and glows yellow upon irradiation of ultraviolet rays.

The composite metal oxide of the present invention having the limited $\text{Fe}_2\text{O}_3/\text{TiO}_2$ weight ratio (0.0005 to 0.005) can form a hard coat film having excellent water

Response Under 37 C.F.R. § 1.116

Expedited Procedure

Art Unit 1773

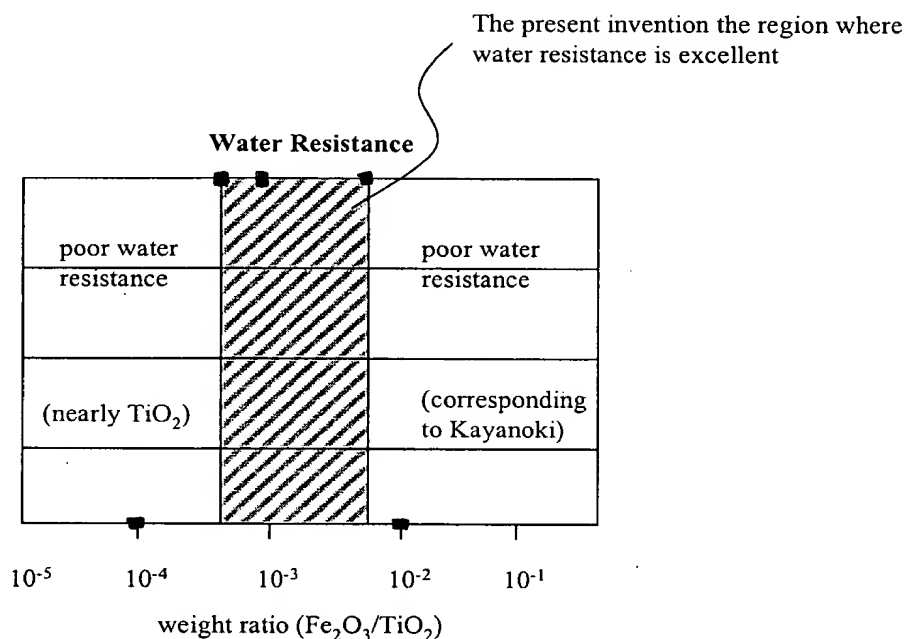
Application No. 09/581,604

Paper Dated December 22, 2003

Reply to Office Action of August 27, 2003

Attorney Docket No. 1217-001125

resistance. In the graph below depicting water resistance, the hard coat film according to the present invention falls within the shaded area and exhibits excellent water resistance.



In contrast, when the weight ratio $\text{Fe}_2\text{O}_3/\text{TiO}_2$ falls below the lower limit, the composite oxide is more like TiO_2 . As a result, the scuffing resistance of the hard coating becomes insufficient. (In order to shield the ultraviolet rays, the use of TiO_2 is effective. However, photochromism is different from the shielding of ultraviolet rays.) The hard coating film on the left portion of the graph (nearly TiO_2) provides insufficient water resistance, scuffing resistance, attrition resistance, dye affinity, and adherence.

Hard coat films containing composite oxide having $\text{Fe}_2\text{O}_3/\text{TiO}_2$ ratio in proportions out of the above weight ratio exhibit photochromism. Therefore, the films glow

Response Under 37 C.F.R. § 1.116

Expedited Procedure

Art Unit 1773

Application No. 09/581,604

Paper Dated December 22, 2003

Reply to Office Action of August 27, 2003

Attorney Docket No. 1217-001125

yellow or blue upon irradiation of ultraviolet rays. It is difficult for the discolored hard coat film to return to its original state.

Furthermore, these films have poor water resistance. The composite metal oxide of the present invention having the limited $\text{Fe}_2\text{O}_3/\text{TiO}_2$ weight ratio (0.0005 to 0.005) has no photochromism and is excellent in water resistance. The specific effects are caused by the limited weight ratio (0.0005 to 0.005) of Fe_2O_3 to TiO_2 of the present invention.

These effects are never suggested in the cited references and Applicants argue that it was not known by one skilled in the art at the time the invention was made that the claimed range would offer excellent water resistance and exhibit no photochromism. "The PTO has the burden to establish a *prima facie* case of obviousness." *In re Fine*, 5 USPQ2d 1596, 1598 (C.A.F.C. 1988). The Examiner cited *Titanium Metals Corp of America v. Banner*, 227 U.S.P.Q. 773 (Fed. Cir. 1985) to support the argument that "it would have been obvious to one having ordinary skill in the art to have expected them to have the same properties." *Titanium Metals Corp of America* states that "a *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected the same properties." However, the Applicants' claimed range exhibits different properties than the range disclosed in Kayanoki, as depicted by the above graphs. The present invention shows improved water resistance and exhibits less photochromism than the range disclosed in Kayanoki. The Examiner has not cited any other support for the assertion of obviousness. The burden to establish a *prima facie* case of obviousness "can be satisf[ied] only by showing some objective teaching in the prior art or that knowledge generally available to one

Response Under 37 C.F.R. § 1.116

Expedited Procedure

Art Unit 1773

Application No. 09/581,604

Paper Dated December 22, 2003

Reply to Office Action of August 27, 2003

Attorney Docket No. 1217-001125

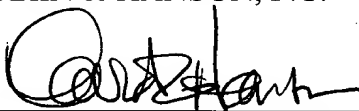
of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.” *In re Fine*, 5 USPQ2d 1596, 1598.

As indicated above, Kayanoki does not disclose, suggest, or in any way motivate a skilled artisan to provide a composite metal oxide of the range claimed in the present invention. Therefore, claims 1-14 are not obvious and the rejection under 35 U.S.C. § 103 should be withdrawn.

In view of the foregoing remarks, it is believed that the present application is in condition for allowance. Reconsideration of the rejections and allowance of claims 1-14 are respectfully requested.

Respectfully submitted,

WEBB ZIESENHEIM LOGSDON
ORKIN & HANSON, P.C.

By 

David C. Hanson, Reg. No. 23,024
Attorney for Applicants
700 Koppers Building
436 Seventh Avenue
Pittsburgh, PA 15219-1818
Telephone No. 412.471.8815
Facsimile No. 412.471.4094
E-mail webblaw@webblaw.com